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NINDS Myotatic Reflex Scale

Availability:	Please click for more information about the instrument: NINDS Myotatic Reflex Scale Link
Classification:	**Supplemental:** Amyotrophic Lateral Sclerosis (ALS) **Exploratory**: Spinal Cord Injury (SCI): It is suggested as an exploratory assessment after SCI, at any time after primary injury, although areflexia is commonly noted in acute injury. However, for therapeutic interventions directed to the CNS, it might be considered a valuable Supplemental assessment, especially to determine whether there is concomitant lower (alpha) motoneuron damage accompanying incomplete SCI which could be an eligibility consideration in some trials. Depending on the study, lower motoneuron damage may alter achievement of the desired clinical endpoint. **Exploratory:** SCI-Pediatric
Short Description of Instrument:	**Construct measured:** Body Structure or Function **Generic vs. disease specific**: Generic
Comments/Special instructions:	**Background (SCI):** Tendon reflex testing allows the investigator to detect a major alpha-motoneuron injury (often characterized by a hyporeflexive response) at the level of spinal damage. However, below the level of lesion the observed increased reflex responses after the sub-acute stage of SCI (after resolution of spinal shock) indicates changes in the excitability of the motor neuron pool. Hyperreflexia often depends on the severity of CNS injury with hyperreflexive responses being the least with either mild or most severe types of SCI and the strongest with moderate levels of SCI severity. Hyperreflexia can be associated with increased muscle tone (and eventually lead to stiffness of fibro-elastic properties of muscles-tendons-joint capsules) in an individual and depending on the trial clinical endpoint might be a criterion for exclusion from a study. Finally, tendon reflexes can be absent (areflexia) in severe sensorimotor complete SCI or during very acute stages of SCI (often referred to as “spinal shock"). Tendon reflexes that can be tested, with the corresponding spinal cord segment, include: Pectoral – C4/5, Biceps – C5/6, Triceps – C7/8, Hip Adductors (brevis, longus and magnus) – L3/4, Quadriceps (patellar tendon) – L3/4, and Achilles – S1/2. The classical deep tendon reflex is the Quadriceps or patellar tendon reflex. Scoring of the reflexes is in categorical values where: absent = 0, reduced = 1, normal = 2, increased = 3, and elicitation of clonus (a form of spasticity) is sometimes scored as "4".

Rationale/ Justification:	Variable reports about psychometric properties, but most recent study (Dafkin et al. 2013) suggests that the subjective evaluation has very good intra- and inter-rater reliability. SCI-Pediatric-specific: Relevant and appropriate, but there are no studies done in youth.
References:	Dafkin, C., Green, A., Kerr, S., Veliotes, D., & McKinon, W. (2013). The accuracy of subjective clinical assessments of the patellar reflex. Muscle Nerve, 47(1), 81–88. Hallett, M. (1993). NINDS myotatic reflex scale. Neurology, 43(12), 2723. Litvan, I., Mangone, C. A., Werden, W., Bueri, J. A., Estol, C. J., Garcea, D. O., . . . Bartko, J. J. (1996). Reliability of the NINDS Myotatic Reflex Scale. Neurology, 47(4), 969–972.